

CLAIMS

What is claimed is:

1. A signal equalizer for an optical storage medium for detecting a restoring signal from the medium and equalizing a digital signal in the restoring signal into an optimized
5 signal for data detections, the signal equalizer comprising:

an adaptive linear equalizer, which performs a linear equalization on the digital signal and outputs a target wave and an error signal; and

a nonlinear distortion cancellation equalizer, which takes the error signal as the target level of the nonlinear distortion cancellation equalizer and performs a
10 nonlinear distortion cancellation according to an estimated nonlinear signal.

2. The signal equalizer of claim 1 with the nonlinear distortion cancellation equalizer further containing a second adaptive linear equalizer and an adder, wherein the output of the second adaptive linear equalizer is fed back to the adder for the adder to output a second error signal according to the error signal and the feedback signal as a nonlinear input signal
15 for the second adaptive linear equalizer.

3. A signal restoring device for restoring a signal from an optical recording medium for data detections, the signal restoring device comprising:

an analog-to-digital (A/D) converter, which converts the restoring signal sample into a digital signal;

20 an adaptive linear equalizer, which performs a linear equalization on the digital signal and outputs a target wave and an error signal; and

a nonlinear distortion cancellation equalizer, which takes the error signal as the target level of the nonlinear distortion cancellation equalizer and performs a nonlinear distortion cancellation according to an estimated nonlinear signal.

4. The signal restoring device of claim 3 further comprising a first adder to sum up the outputs of the adaptive linear equalizer and the nonlinear distortion cancellation equalizer.

5. The signal restoring device of claim 3 with the nonlinear distortion cancellation equalizer further containing a second adaptive linear equalizer and an adder, wherein the output of the second adaptive linear equalizer is fed back to the adder for the adder to output a second error signal according to the error signal and the feedback signal as a nonlinear input signal for the second adaptive linear equalizer.